

ISSUE NO.

SUPPORTING INFORMATION

SHEET INDEX NOTES

- LEAD INDEX**

OPTION INDEX

ISSUE

28.

②

SHOE SIZE
6.5

FS 1 LONG LINE CIRCUIT

TO DIAL CENTRAL
OFFICE SUBSCRIBER
LINE CKT OR LINE
SWITCHING CKT OR
PBX STATION LINE
CKT OR DIAL LONG
LINE CKT

CONNECTION
SHOWN ON
TEST POSITION
CKT
SD-96594-01

① +24 OR +48 D OR B
TO MAX 10
OTHER FS 1

FS 2
LINE LAMP

TO MISC
FUSE PANEL
TO MAX 3
OTHER FS 1
GRD A
① ② D OR B
TO MAX 10
OTHER FS 1

TO SUBSCRIBER
LINE OR DIAL
LONG LINE CKT
OR PBX TRK CKT

TO 2D2, 2F2, OR 2H2, OR
TO POWER RINGING
AND TONE DISTR CKT
IN CSBR NO. 5
TO MAX. 3
OTHER FS 1

TO EG REPEATER

DIAL LONG LINE CIRCUIT
REPEATED RINGING

SD-96589-01-B1

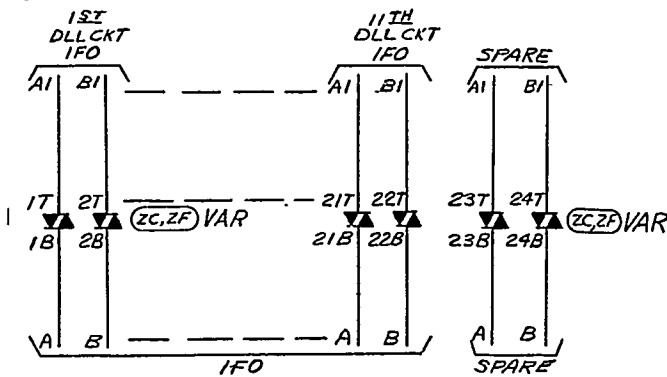
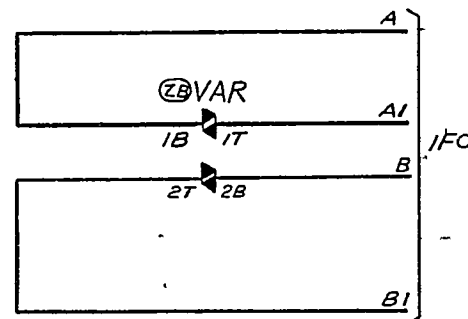
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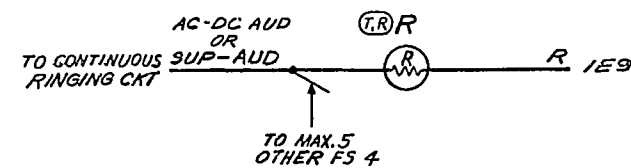
ISSUE
180

ISSUE
1
JB
18
64
2D
ER
WE
JS
3D
5D
64
7D
BAC
9B
OB

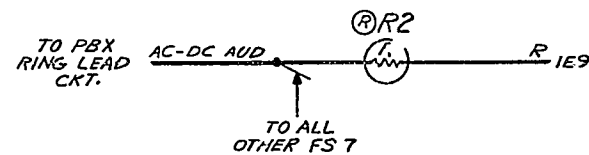
③ FS3 LINE LAMP PROTECTION CIRCUIT



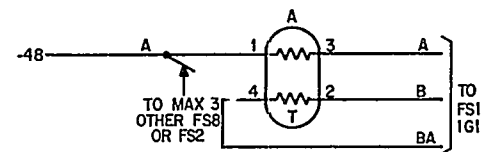
④ FS4 RINGING LAMP (NO.1 CROSSBAR, SX'S AND PANEL)



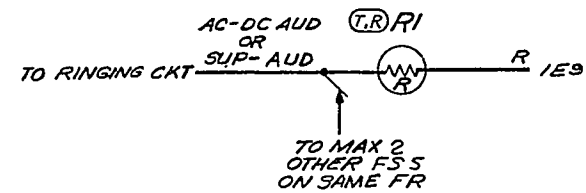
⑥ FS7 RINGING LAMP (PBX SYSTEMS) SEE NOTE 306



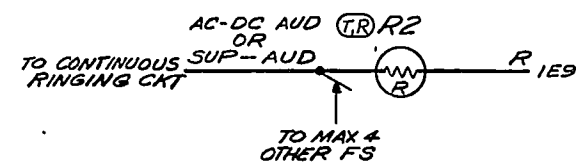
⑦ FS8 LINE THERMISTOR



⑤ FS5 RINGING LAMP (NO.1 ESS)



⑥ FS6 (MFR DISC.) RINGING LAMP (PBX SYSTEM)



DIAL LONG LINE CIRCUIT
REPEATED RINGING

②

SD-96589-01-B2

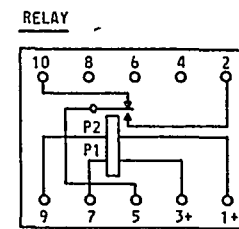
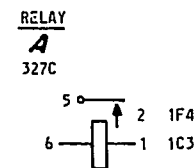
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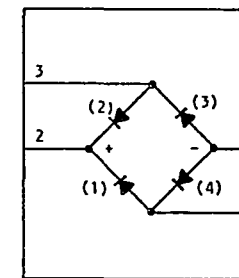
APP FIG. 1

RELAY													
DESIG	B				R				R				DESIG
CODE	BF17				BF45				BF18				CODE
OPTION	A				B, 2H				B				OPTION
CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC
12													12
11													11
10													10
9													9
8													8
7													7
6													6
5													5
4													4
3													3
2													2
1													1
COIL													COIL



DESIG	L	
CODE	328C	
OPTION		
TERM.	LOC	LOC
10		
9	1B5	
8		
7	1B5	
6		
5	1D2	
4		
3	1B5	
2	1D2	
1	1B5	

COMPONENT ASSEMBLY



DESIG	LOC	CODE
C1	1C4	535GA
C2	1C4	535GA
C3	1F4	KS-19524, L1, 25
C4	1D7	KS-19524, L14, 90
C5	1C2	5966, 1.96
C9	1D3	535DE
C10	1D4	535GD

CAPACITOR

DESIG	LOC	CODE
C1	1C4	535GA
C2	1C4	535GA
C3	1F4	KS-19524, L1, 25
C4	1D7	KS-19524, L14, 90
C5	1C2	5966, 1.96
C9	1D3	535DE
C10	1D4	535GD

DRAWING
ISSUE
1
20
30
40
50
60
70
80
90
100

CONNECTOR

DESIG	LOC	CODE
P	1A1, 1A8	988C, 908E

DIODE

OPTION	DESIG	LOC	CODE
(MD) Z1	CR2	1F4	458A
(MD) Z2	CR2	1F4	446F 533F
(MD) G	CR3	1B2	460A
ZA	CR19	1A2	460M

JACK

DESIG	LOC	CODE
TST	1G6	KS-19427, L8

INDUCTOR

DESIG	LOC	CODE
L1	1B4	1682D
L2	1B3	1682D

NETWORK

OPTION	DESIG	LOC	CODE
	G1	1F8	195A

POTENTIOMETER

DESIG	LOC	CODE
MD ZD R	1E5	KS-19646, L4, 25K
ZN R	1E5	KS-19646, L4, 5K

RESISTOR

DESIG	LOC	CODE
MD ZD R1	1C3	KS-14603, L3C, 240
ZE R1	1C3	KS-20289, L3C, 240
R2	1C3	237A, 600 KS-20810, L1A, 600
R3	1D3	237A, 30 KS-20810, L1A, 30.1
MD ZK R4	1C3	KS-16645, L1, 22K KS-13490, L1, 22K
R5	1G3	KS-14603, L1C, 464
R10	1E7	KS-16645, L2, 0.1 MEG
MD ZM RT	1F5	KS-13490, L20, 0.1 MEG
ZL RS	1C1	1A4A, SEE NOTE 105 KS-20289, L6C
		KS-13490, L2, 100K

TRANSFORMER

DESIG	LOC	CODE
T1	1A4	2578AG

THERMISTOR

DESIG	LOC	CODE
T1	1C2	8C

VARISTOR

DESIG	LOC	CODE
RV	1D3	1000
RVA	1C5	1000
RVB	1B3	1000

APP FIG. 2

DESIG	LOC	CODE
A	1F0	20A (RES)

APP FIG. 3

DESIG	LOC	CODE
(MD) ZB VAR	2A1	309A
MD ZC [11] VAR	2B3, 2B4	309C

APP FIG. 4

DESIG	LOC	CODE
(MD) T R	2D1	13C (RES)
R R	2D1	13D (RES)

APP FIG. 5

DESIG	LOC	CODE
(MD) T R1	2F1	13C (RES)
R R1	2F1	13D (RES)

APP FIG. 6

DESIG	LOC	CODE
(MD) T R2	2H1	13C (RES)
R R2	2H1, 2C4	13D (RES)

APP FIG. 7

DESIG	LOC	CODE
A	2E4	64A

DIAL LONG LINE CIRCUIT
REPEATED RINGING

2

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CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER	
A	1-1/3	-48 TALKXX	MAX 4 APP FIG. 1	
B	1-1/3	+48 TALK	MAX 11 APP FIG. 1	
D	1-1/3	+24 TALK XXX	MAX 11 APP FIG. 1	
	0.18HV	SUP-	3 APP FIG. 5 IN ESS NO. 1	
	1/4HV	OR	3 APP	SXS
	1/2HV	X AC-DC	FIG. 4 IN	PANEL OR CSBR NO. 1
		GRD		
BATTERY SYMBOL			VOLTAGE RANGE	
+48			45-52	
+24			44-52	
SUP-			20.75-26.25	
AC-DC			AC	DC
			84-88	45-52
X RING FUSE FURNISHED AS PART OF RINGING DISTR CKT (ESS NO. 1).				
XX -48V FUSE FURNISHED AS PART OF MISC. CKT FOR ALL FRAMES. SEE VOLTAGE RANGE (ESS NO. 1)				
XXX +24V FURNISHED IN ESS NO. 1 OFFICE				

102.

FEATURE OR OPTION		PROVIDE	
		APP OR HRG	QUANTITY
LONG LINE SERVICE IN	CSBR NO. 1 & 5, SXS, ESS NO. 1, PANEL & PBX	1	1 PER CKT
	CSBR NO. 1, SXS & PANEL	4	1 PER 4
	ESS NO. 1	5	APP FIG. 1
	PBX	6	
LINE VOLTAGE (SEE NOTES 201 & 305)		48V	ZK, WK
		72V OR 96V	YX, XX
TANDEM OPERATION (SEE NOTE 302)		1	XX
APPLY PER WORKING LIMITS			SX
POSITIVE SUPPLY VOLTAGE		24V	J
		48V	H
AUTOMATIC SHORT LOOP REGULATION (SEE NOTE 106)		REQD	2, 3 E
		NOT REQD	7

X NONRECORD OPTION

CIRCUIT NOTES: (CONT)

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCE IN OHMS	CAPACITANCE IN UF
1	470	.11

104.

RECORD OF APP FIGURES, WIRING AND APPARATUS CHANGES						
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&H	MD
BAC	F OR G	G		F		G
9B	APP FIG. 3	NONE	102	APP FIG. 3		
	E	NONE	102	E		
	R OR T	T		R		T
10B	A OR B	B		A		B
11B	F OR ZA	F		ZA		F
11B	ZB OR ZC	ZB		ZC		ZB
12B	ZD OR ZE	ZD	105	ZE		ZD
12B	ZC OR ZF	ZC		ZF		ZC
14B	ZG	ZG				ZG
14B	A OR ZH	A		ZH		A
14B	RESISTOR			KS-13490		KS-16645
14B	CONNECTOR			908E		908C
15B	ZI OR ZJ	ZI		ZJ		ZI
15B	RESISTOR			KS-20810 LIA		237A
				KS-20289 L6C		144A
16B	ZK	ZK				ZK
17B	ZL	NONE		ZL		
17B	APP FIG. 7	APP FIG. 2, 3	102	APP FIG. 2, 3, 7		
18D	ZM OR ZN	ZM OR ZD	107	ZN		ZM

CIRCUIT NOTES: (CONT)

105.
(MFR DISC)

THE VALUE OF THE RT RESISTOR SHALL BE CHOSEN DURING MANUFACTURE SO AS TO MEET THE TRIPPING LEVEL ADJUSTMENT SPECIFIED IN THE CIRCUIT REQUIREMENT TABLE.

106. AUTOMATIC REGULATION OF LOOP CURRENT ON SHORT LOOPS IS REQUIRED IF THE CABLE PAIR CONDUCTOR LOOP RESISTANCE ON THE SUBSCRIBER SIDE IS LESS THAN THE MINIMUM VALUE SHOWN BELOW.

LINE VOLTAGE	MINIMUM CONDUCTOR LOOP RESISTANCE (OHMS)
48V	500
72V	1000
96V	1500

107. PRIOR TO ISSUE 18D, OPTION ZM WAS PART OF OPTION ZE.

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, VALUES PRECEDED BY THE SYMBOL + (PLUS) OR - (MINUS) ARE IN VOLTS.
302. THE WORKING LIMIT FOR LOOP B SHALL INCLUDE ALL EXTERNAL CIRCUIT RESISTANCE. OPTION X MAY BE APPLIED IN THE "A" UNIT TO INCREASE RANGE.
303. SUBSCRIBER LINES SHALL BE EQUIPPED WITH 500 TYPE SUBSETS WITH HIGH IMPEDANCE RINGERS.
304. USE HIGH IMPEDANCE RERING BRIDGES AND TWO STEP OPERATOR HOLDING BRIDGES AT PBX ONLY.
305. THE TRIPPING LEVEL MUST BE ADJUSTED AS SHOWN IN THE CIRCUIT REQUIREMENT TABLE FOR THE (TR) RELAY.
306. DISREGARD RING GROUND LEAD ON PBX "RINGING LEADS CIRCUIT".

EQUIPMENT NOTES:

201. ONLY ONE OPTION SCREW IS FURNISHED FOR USE IN APPLYING Z OR Y, AND W OR K OPTION, THIS IS TO PREVENT ACCIDENTAL DAMAGE TO THE UNIT.

TRANSMISSION TEST REQUIREMENTS (1000 CYCLE LOSS BETWEEN 600 OHM TERMINATIONS)					
(T1) TO OTHER APP * TO OTHER APP * Δ(RV)*			MAX ALLOWABLE CIRCUIT LOSS (DB)		
			0.9		
INDIVIDUAL APPARATUS LOSSES (DB)					
APPARATUS	DESIG	CODE	MAX LOSS	MIN LOSS	REMARKS
CAPACITORS	C1,C2	4.22UF	18.7	17.7	
TRANSFORMER	T1	2578AG	0.9	0.5	
* INDICATES APPARATUS FOR WHICH INDIVIDUAL LOSSES ARE NOT REQD.					

WORKING LIMITS
SEE SD-96593-01DIAL LONG LINE CIRCUIT
REPEATED RINGING

(2)

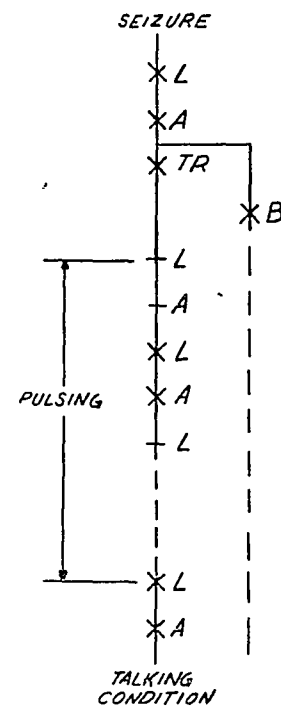
SD-96589-01-D1

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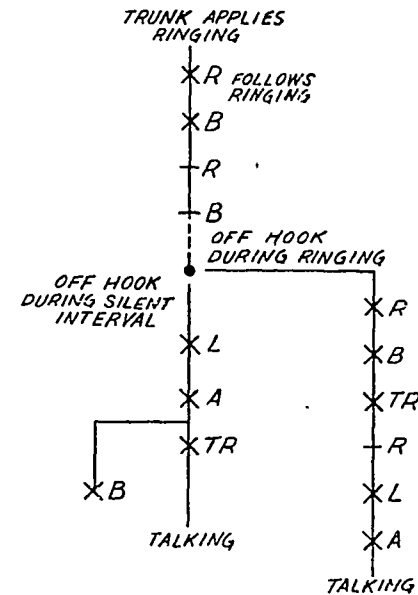
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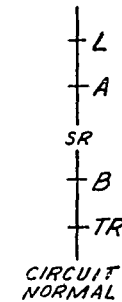
SC 1 ORIGINATING CALL



SC 2 TERMINATING CALL



SC 3 DISCONNECT



SD-96589-01-EI

DIAL LONG LINE CIRCUIT
REPEATED RINGING

2

SD-96589-01-EI

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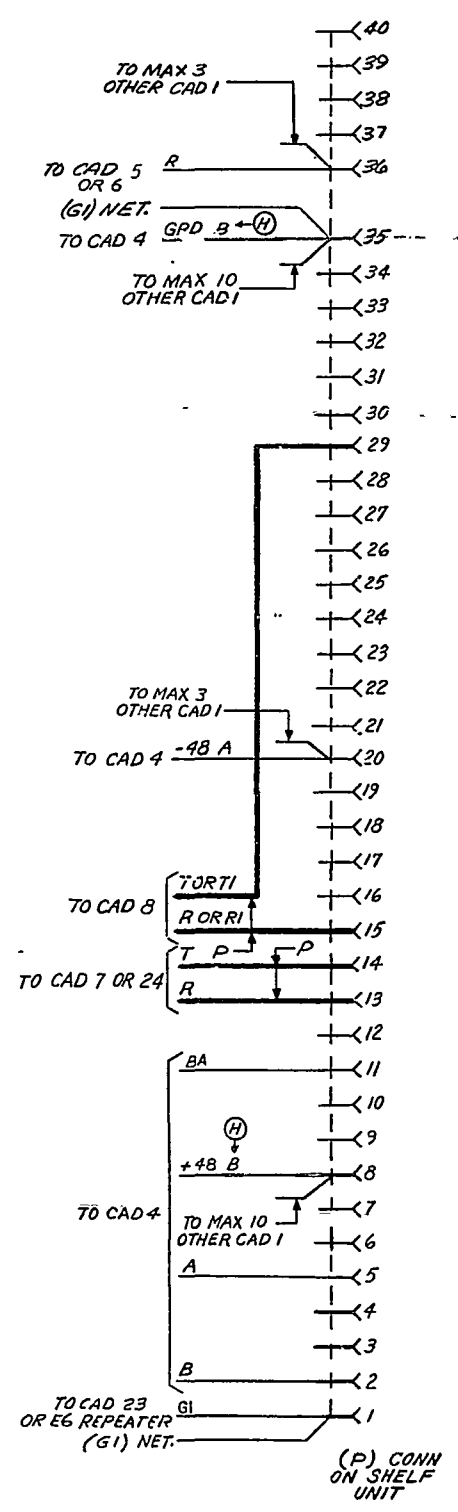
6S

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1	JTA
20	ERR
30	WE
50	US
60	
70	
98	

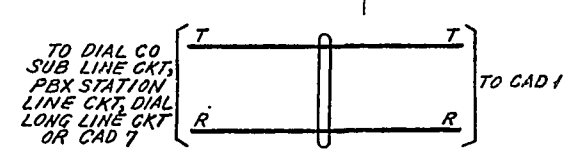
CAD 1

(FOR APP FIG. 1 & 2)
SXS NO. 1, 350A, 355A, 35E97,
CSBR NO. 1, 5 OR PANEL
OFFICES



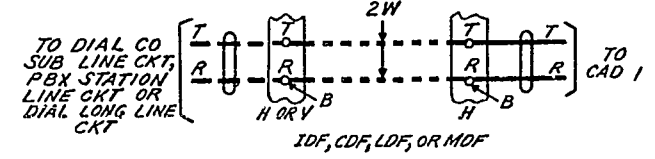
CAD 2 (MFR DISC)

(FOR APP FIG. 1)



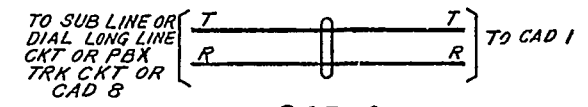
CAD 7 (ABM ONLY)

(FOR APP FIG. 1)



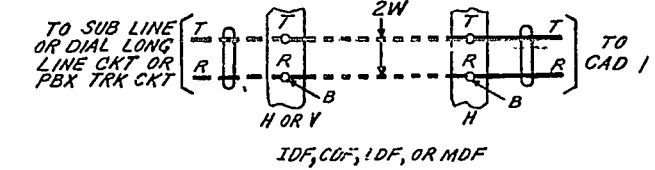
CAD 3 (MFR DISC)

(FOR APP FIG. 1)



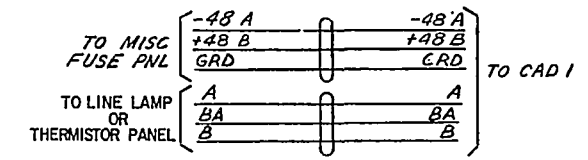
CAD 8

(FOR APP FIG. 1)



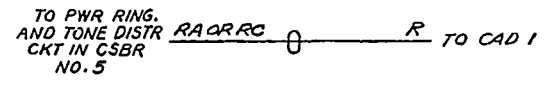
CAD 4

(FOR APP FIG. 1, 2 OR 7)



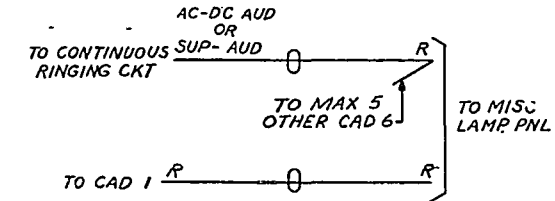
CAD 5

(FOR APP FIG. 1)



CAD 6

(FOR APP FIG. 4)



DIAL LONG LINE CIRCUIT
REPEATED RINGING

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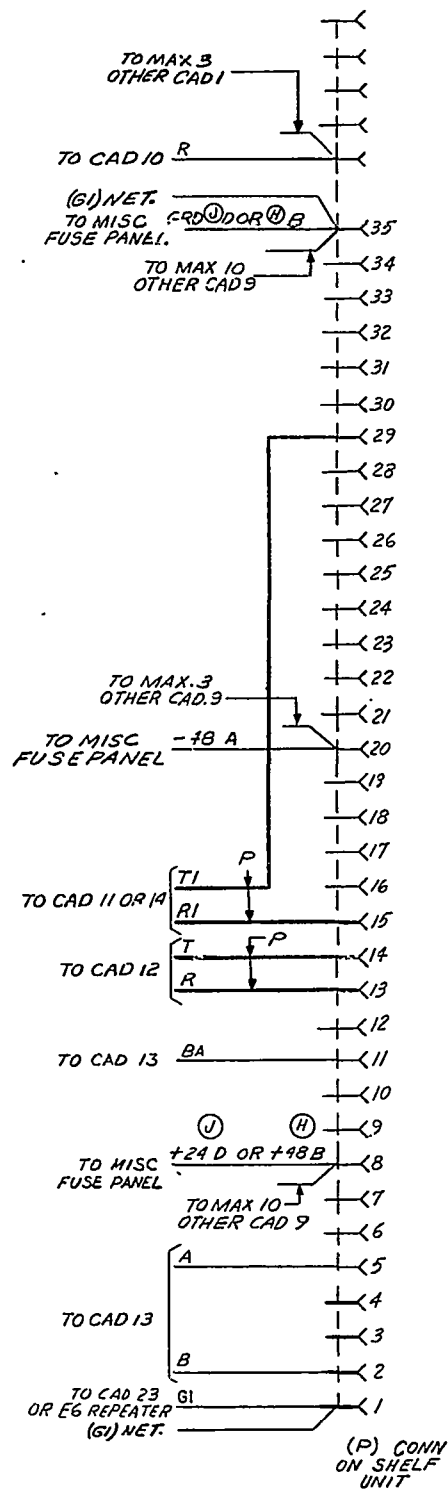
2

6S

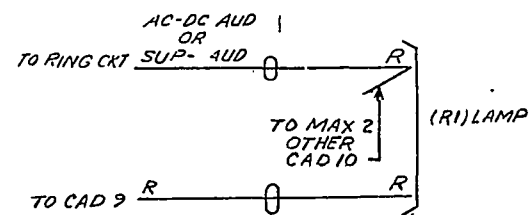
SD-96589-01-G1

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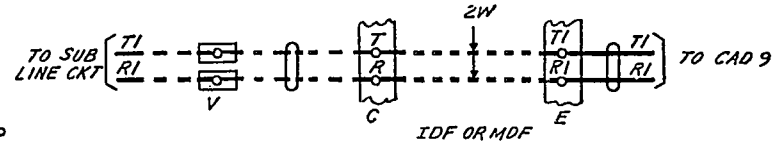
CAD 9
(FOR APP FIG. 1)
ESS NO. 1 OFFICE



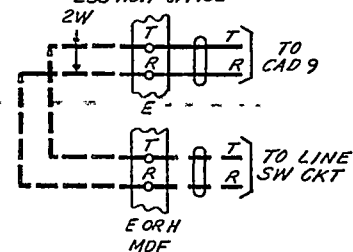
CAD 10
(FOR APP FIG. 5)
ESS NO. 1 OFFICE



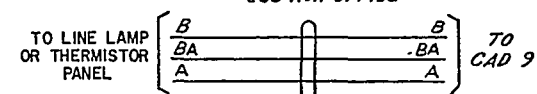
CAD 11
(FOR APP FIG. 1)
ESS NO. 1 OFFICE



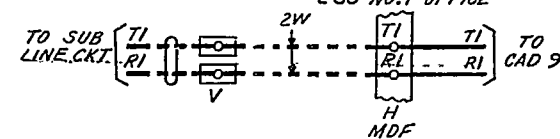
CAD 12
(FOR APP FIG. 1)
ESS NO. 1 OFFICE



CAD 13
(FOR APP FIG. 1, 2 OR 7)
ESS NO. 1 OFFICE



CAD 14
(FOR APP FIG. 1)
ESS NO. 1 OFFICE



DIAL LONG LINE CIRCUIT
REPEATED RINGING

2

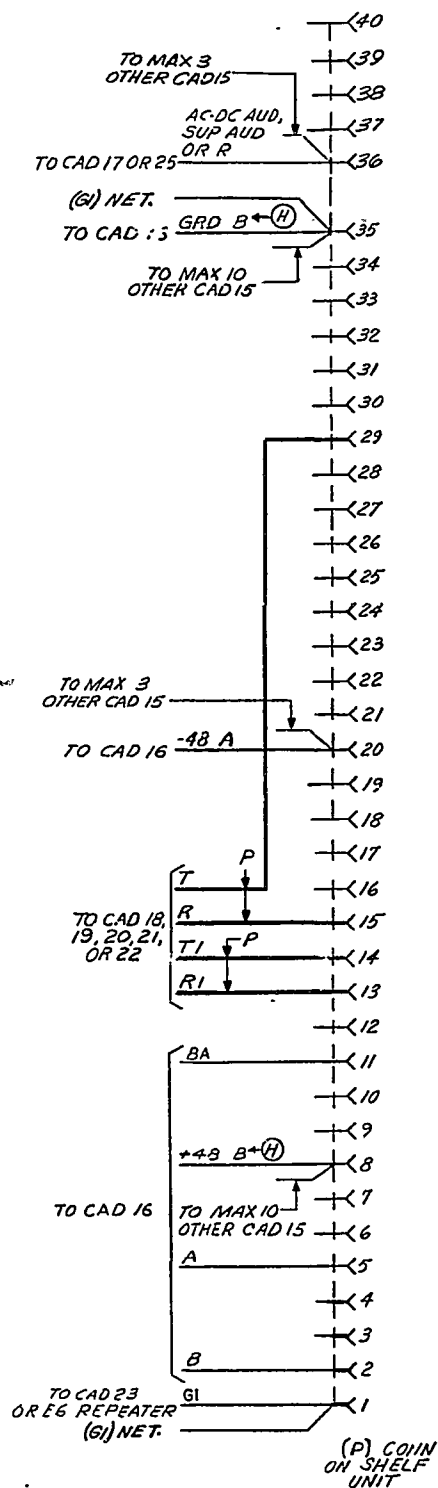
SD-96589-01-G2

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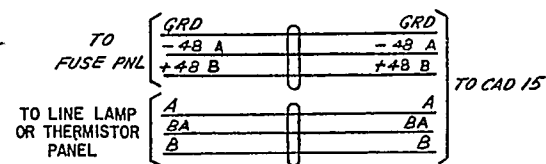
6S

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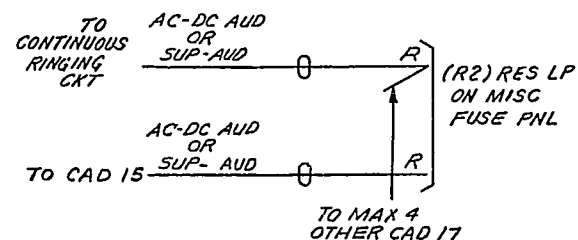
CAD 15
(FOR APP FIG. 1)
PBX OFFICES



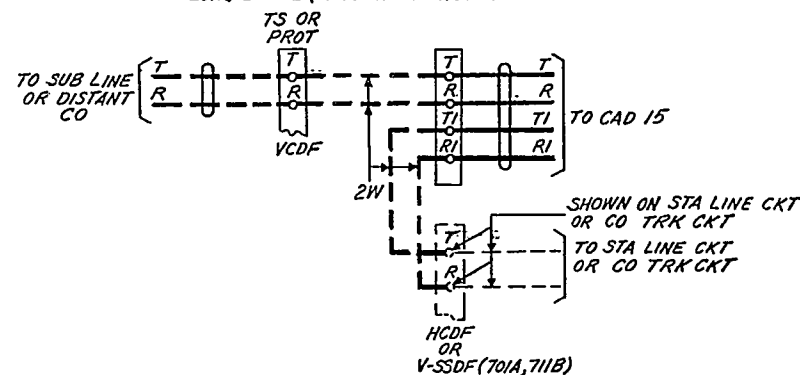
CAD 16
(FOR APP FIG. 1, 2 OR 7)



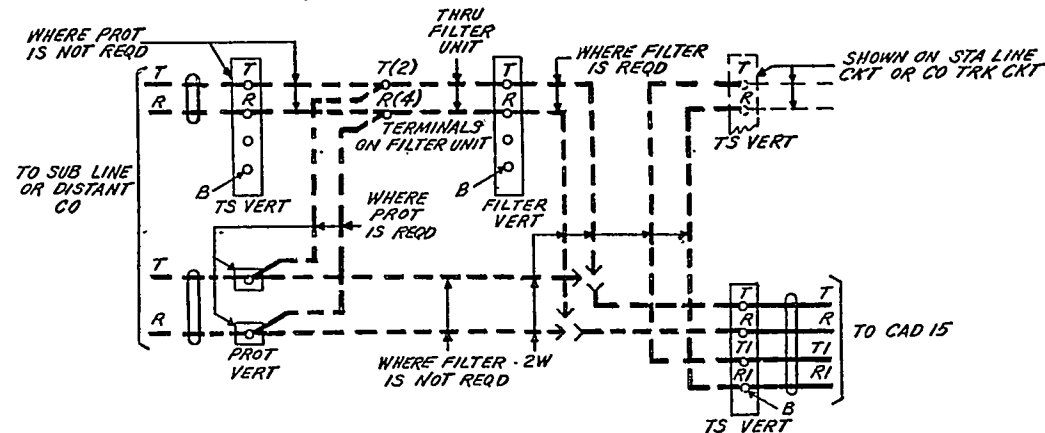
CAD 17 (MFR DISC)
(FOR APP FIG. 6)



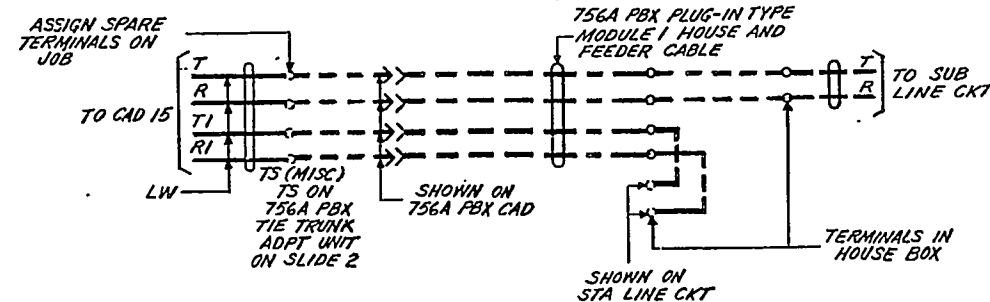
CAD 18
(FOR 701A, 701B, 711A, 711B PBX)
LONG LINE EQUIPMENT LOCATED AT PBX



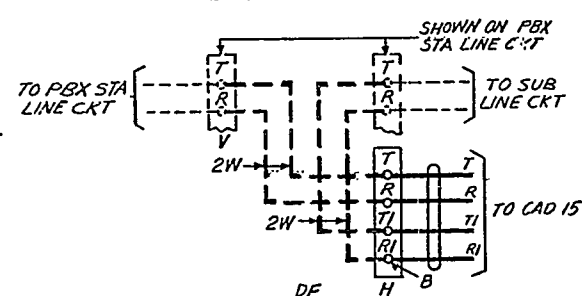
CAD 19
(FOR 740E PBX)
LONG LINE EQUIPMENT LOCATED AT PBX



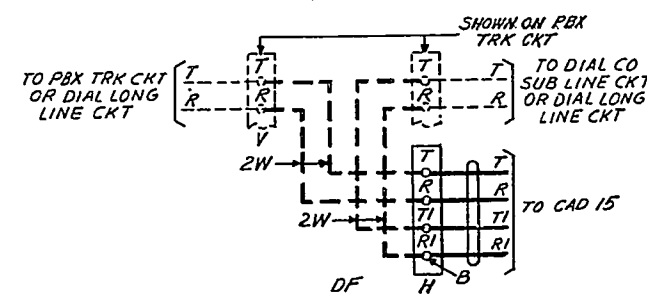
CAD 20
(FOR 756A PBX)
LEADS TO STATION LINE



CAD 21
LONG STA LINE PBX NO. 600C



CAD 22
LONG TRK PBX NO. 600G



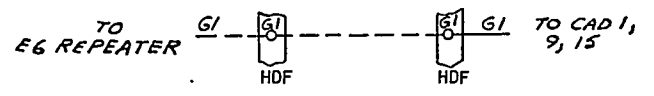
SD-96589-01-63

SD-96589-01-G4

A
B
C
D
E
F
G
H

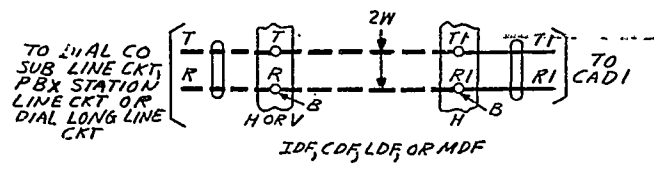
CAD 23

(FOR APP FIG. 1)



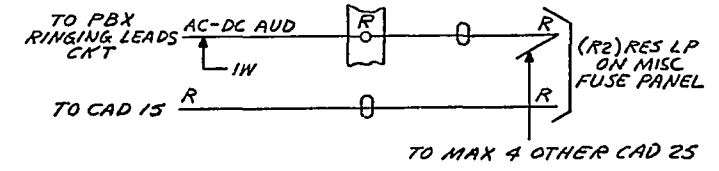
CAD 24

(FOR APP FIG. 1)



CAD 25

(FOR APP FIG. 6)



A
B
C
D
E
F
G
H

DIAL LONG LINE CIRCUIT REPEATER RINGING		②	SD-96589-01-G4
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